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# American Anthropologist

NEW SERIES

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VOL. 22

JULY-SEPTEMBER, 1920

No. 3

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## INDIAN CORN-HILLS IN MASSACHUSETTS

By EDMUND B. DELABARRE AND HARRIS H. WILDER

### I. HISTORICAL INTRODUCTION

THE fact that there are still in New England perfectly preserved and unmistakable remains of the small mounds or hills in which the Indians planted their maize and other crops, seems not to be generally recognized. Even for other parts of the country, reports of the existence of such "Indian garden beds" are very few. I. A. Lapham<sup>1</sup> tells of their occurrence in Wisconsin, and it is said that Cheney<sup>2</sup> found them in western New York. Sir John Lubbock<sup>3</sup> quotes Lapham. Lapham's description is as follows: In many places

the ground is covered with small mamillary elevations, which are known as Indian corn-hills. They are without order of arrangement, being scattered over the surface with the utmost irregularity. That these hillocks were formed in the manner indicated by their name, is inferred from the present custom of the Indians. The corn is planted in the same spot each successive year, and the soil is gradually brought up to the size of a little hill by the annual additions.

In one of his localities,

another evidence of former cultivation occurs, consisting of low, broad, parallel ridges, as if corn had been planted in drills. They average four feet in width, twenty-five of them having been counted in the space of a hundred feet; and the depth of the walk between them is about six inches. These appearances,

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<sup>1</sup> *The Antiquities of Wisconsin*, 1855, pp. 19, 57; *Smithsonian Contributions to Knowledge*, vol. VII.

<sup>2</sup> On Ancient Monuments in Western New York; *Thirteenth Report of the Regents of the State of New York*, 1860, p. 40. The writers have not been able to verify this citation.

<sup>3</sup> *Prehistoric Times*, 1913 ed., p. 273.

which are here denominated "ancient garden-beds," indicate an earlier and more perfect system of cultivation than that which now prevails.

In another place,

the depressions or walks between the beds were about eight inches deep and fifteen inches wide.

As to the existence of such remains in New England, we seem to have only a statement by Jeremy Belknap, applying to New Hampshire, and a doubtful report from Massachusetts. Belknap wrote in 1792:

The remains of their fields are still visible in many places; they were not extensive, and the hills which they made about their corn stalks were small.<sup>1</sup>

The Massachusetts instance is mentioned in the Handbook of American Indians North of Mexico, which does not seem to take it seriously. Under the heading "Indian-corn hills," it remarks: "In Essex Co., Mass., according to Bartlett, hummocky land resembling hills of Indian corn."<sup>2</sup> The original description by Bartlett we have not traced to its source.

Mr. William M. Cotton, of Providence, informs the writers that when he was a boy, living in Pomfret, Connecticut, in uncultivated pastures on his farm there were numerous small mounds that were generally known as Indian corn-hills. Whether they still exist and are so known, we have not learned. We have personally investigated, however, two localities in Massachusetts in which the ancient "Indian corn-hills" unquestionably persist.

That there should be any traces left at the present day of the gardens cultivated by the Indians two hundred and fifty years ago and earlier, may at first sight seem incredible. But there are many fields in New England, probably some in every town, that have always been used by white men as pastures, and have never been touched by the plough. Any of these which may have been used by the Indians as corn fields would stand an excellent chance of having the hills indefinitely preserved, because of the way in which the Indians did their planting. The early settlers and explorers give interesting accounts of this, and we may advantageously

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<sup>1</sup> *History of New Hampshire*, vol. III, p. 88.

<sup>2</sup> Vol. I. 607.

preface our own observations with quotations from them and others.

Although the cultivation of corn (maize) by the aborigines of the West Indies was observed and reported by the earliest of the discoverers, probably Samuel de Champlain was the first to give any account of this form of agriculture in New England. His first recorded observation was made during his voyage of the summer of 1605, at or near what is now Saco, Maine, his "Choüa-coet." He writes:

The next day [July 9, 1605] Sieur de Monts and I landed to observe their tillage on the bank of the river [Saco river]. We saw their Indian corn, which they raise in gardens. Planting three or four kernels in one place, they then heap about it a quantity of earth with shells of the *signoc* before mentioned [the horse-shoe crab, *Limulus polyphemus*]. Then three feet distant they plant as much more, and thus in succession. With this corn they put in each hill three or four Brazilian beans [the kidney bean, *Phaseolus vulgaris*], which are of different colors. When they grow up, they interlace with the corn, which reaches to the height of from five to six feet; and they keep the ground very free from weeds. We saw there many squashes, and pumpkins, and tobacco,<sup>1</sup> which they likewise cultivate. The Indian corn which we saw was at that time about two feet high, some of it as high as three. The beans were beginning to flower, as also the pumpkins and squashes. They plant their corn in May, and gather it in September<sup>2</sup> (p. 62).

When in Boston Bay, about the mouth of the Charles, he records that

they brought also some purslane, which grows in large quantities among the Indian corn, and of which they make no more account than of weeds. We saw here a great many little houses, scattered over the fields where they plant their Indian corn (p. 67).

Reaching the harbor of Nauset on Cape Cod he says that they went about a league along the coast. Before reaching their cabins, we entered a field planted with Indian corn, in the manner before described. The corn was in flower, and five and a half feet high. There was some less advanced, which

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<sup>1</sup> "The tobacco of the New England Indians was *Nicotiana rustica*, not *N. tabacum*. The former is inferior, and now grows wild in some parts of the north, a relic of cultivation by the Indians."—*Mourt's Relation*, ed. Dexter, p. 36n.

<sup>2</sup> These quotations from Champlain are taken from the recent translation made by W. L. Grant (Oxford), which appeared in 1907, as one of the series of *Original Narratives*, edited by J. Franklin Jameson, and published by Scribner's. The pages here given correspond to this first edition.

they plant later. We saw many Brazilian beans, and many squashes of various sizes, very good for eating; some tobacco, and roots which they cultivate, the latter having the taste of an artichoke.<sup>1</sup> . . . There were also several fields entirely uncultivated, the land being allowed to remain fallow. When they wish to plant it, they set fire to the weeds, and then work it over with their wooden spades (p. 71).

When the Indians wished to clear forest land they did it in great part by help of fire, according to information obtained in the harbor of Gloucester, Mass.

Some of the land was already cleared up, and they were constantly making clearings. Their mode of doing it is as follows: after cutting down the trees at the distance of three feet from the ground, they burn the branches upon the trunk, and then plant their corn between these stumps, in course of time tearing up also the roots (p. 92).

The corn, thus grown, the Indians were accustomed to store in granaries situated nearby and placed partly beneath the surface of the ground. These are locally known as "Indian barns," and have been frequently located in the Connecticut river towns in Massachusetts [*e.g.*, George Sheldon, in the History of Deerfield]. These Champlain describes as he finds them at Chatham, Mass., on the Cape.

There is a considerable quantity of land cleared up, and many little hills, where they cultivate corn and the various grains on which they live. . . . All the inhabitants of this place are very fond of agriculture, and provide themselves with Indian corn for the winter, which they store in the following manner: They make trenches in the sand on the slope of the hills, some five to six feet deep, more or

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<sup>1</sup> *Helianthus tuberosus*, Jerusalem Artichoke. Its history is thus described by Neltje Blanchan, in *Nature's Garden*: "In a musty old tome printed in 1649, and entitled 'A Perfect Description of Virginia,' we read that the English planters had 'rootes of several kinds, Potatoes, Sparagus, Carrets and Hartichokes'—not the first mention of artichokes by Anglo-Americans. Long before their day the Indians, who taught them its uses, had cultivated it; and wherever we see the bright yellow flowers gleaming like miniature suns above roadside thickets and fence rows in the East, we may safely infer the spot was once an aboriginal or colonial farm. White men planted it extensively for its edible tubers. . . . As early as 1617 the artichoke was introduced into Europe, and only twelve years later Parkinson records that the roots had become very plentiful and cheap in London. The Italians also cultivated it under the name *Girasole Articcocco* (sunflower artichoke), but it did not take long for the *girasole* to become corrupted into Jerusalem, hence the name Jerusalem artichoke common to this day. When the greater value of the potato came to be generally recognized, the use of artichoke roots gradually diminished."

less. Putting their corn and other grains into large grass sacks, they throw them into these trenches, and cover them with sand, three or foure feet above the surface of the earth, taking it out as their needs require. In this way it is preserved as well as it would be possible to do in our granaries (p. 95).

The description "Of their Planted fruits in Virginia, and how they use them," which Captain John Smith wrote in 1606, is applicable also to this region.

The greatest labour they take, is in planting their corne, for the Country naturally is overgrowne with wood. To prepare the ground they bruise the barke of the trees neare the root, then doe they scotch the roots with fire that they grow no more. The next yeare with a crooked peece of wood they beat up the weeds by the rootes, and in that mould they plant their Corne. Their manner is this. They make a hole in the earth with a sticke, and into it they put foure graines of wheate and two of beanes. These holes they make four foote one from another;<sup>1</sup> Their women and children do continually keepe it with weeding, and when it is growne middle high, they hill it about like a hop-yard.

In Aprill they begin to plant, but their chiefe plantation is in May, and so they continue till the midst of June. What they plant in Aprill they reape in August, for May in September, for June in October; Every stalk of their corne commonly beareth two eares, some three, seldom any foure, many but one and some none. Every eare ordinarily hath betwixt 200 and 500 graines. The stalke being greene hath a sweet juice in it, somewhat like a sugar Cane, which is the cause that when they gather their corne greene, they sucke the stalkes: for as we gather greene pease, so doe they their corne being greene, which excelleth their old. They plant also pease they call Assentamens, which are the same they call in Italy, Fagioli. Their Beanes are the same the Turkes call Garnanses, but these they much esteeme for dainties.<sup>2</sup>

The season for planting, according to Belknap<sup>3</sup>, was "when the leaves of the white oak are as big as the ear of a mouse." William Bradford, in his History of Plymouth,<sup>4</sup> says that Squanto "tould them excepte they gott fish and set with it (in these old grounds) it would come to nothing." *Mourt's Relation* (by Bradford and Winslow)<sup>5</sup> reports the same fact: "According to the manner of the

<sup>1</sup> "Four or five feet apart" is the spacing mentioned by W. Strachey, in *The Historie of Travaile into Virginia*, p. 116.

<sup>2</sup> *The Historie of Virginia, University of Glasgow Edition*, 1907, pp. 58-59.

<sup>3</sup> *History of New Hampshire*, vol. III, p. 93.

<sup>4</sup> *Massachusetts Historical Society Edition*, 1912, vol. I, p. 215.—A note by the editors on page 220 gives evidence for the fact that the Narragansetts "have good corne without fish." Possibly this may be the reason why we have never heard of the survival of the old corn-hills in Rhode Island.

<sup>5</sup> Ed. Dexter, 1865, p. 132.

Indians, we manured our ground with Herings or rather Shadds, which we haue in great abundance, and take with great ease at our doores." Edward Winslow<sup>1</sup> says:

The seed-time beginneth in midst of Aprill, and continueth good till the midst of May. . . . Mays, which our Indians call *Ewachim*, . . . will not be procured without good labour and diligence, especially at seed-time, when it must also be watched by night to keepe the Wolues from the fish, till it be rotten, which will be in foureteene dayes; yet men agreeing together, and taking their turnes it is not much.

Concerning the inexhaustible supply of fish for their purposes, George E. Ellis<sup>2</sup> remarks:

The alewives were abundant, not only in the Taunton river, but probably in all the rivers along the coast. The early settlers speak of the great quantities of them in the two rivers at Plymouth; and a brook running into the Mystic, near Harvard College, is still called Alewife brook."

Roger Williams<sup>3</sup> gives still further details of interest concerning the Indians and their corn fields.

From thick warme vallies, where they winter, they remove a little neerer to their Summer fields; when 'tis warme Spring, then they remove to their fields where they plant Corne. In middle of Summer, because of the abundance of Fleas, which the dust of the house breeds, they will flie and remove on a sudden from one part of their field to a fresh place: And sometimes having fields a mile or two, or many miles asunder, when the worke of one field is over, they remove house to the other. [Crows were a nuisance, then as now.] Against the Birds the *Indians* are very carefull, both to set their corne deep enough that it may have a strong root, not so apt to be pluckt up, (yet not too deep, lest they bury it, and it never come up:) as also they put up little watch-houses in the middle of their fields, in which they, or their biggest children lodge, and earely in the morning prevent the Birds. . . . The Women set or plant, weede, and hill, and gather and barne all the corne, and Fruits of the field. . . . When a field is to be broken up, they have a very loving sociable speedy way to dispatch it: All the neighbours men and Women, forty, fifty, a hundred &c, joyne, and come in to help freely. With friendly joyning they break up their fields. . . . The *Indian* Women to this day (notwithstanding our Howes, doe use their naturall H- ves of shells and Wood."

Most of the descriptions thus far given speak of the hills either as being "scattered over the surface with the greatest irregularity,"

<sup>1</sup> *Good Newes from New England*, 1624, p. 62.

<sup>2</sup> *The Red Man*, 1882, p. 175.

<sup>3</sup> *A Key into the Language of America*, 1643, pp. 37, 46, 89, 100, 101.

or more frequently as being placed four or five feet apart, implying regularly spaced parallel rows or ridges. In some parts of the country, however, the hills seem to have been placed much nearer together. Cyrus Thomas<sup>1</sup> quotes Sagard as describing the agriculture of the Hurons in 1623-26, saying that they dug a round place at every two feet or less, "every year in the same places and spots."

Summarizing, then, from these varied accounts from men who have seen the actual cultivation of Indian corn in New England by the aborigines, before they were touched by white influence, we have a definite picture of isolated hills, each built by itself, and cultivated in the same place, year after year. There was no suggestion of either plowing or breaking up an entire area in which they would plant as we do, but the fabrication of these separate hills, some two to four feet apart, usually in rows running one way.

There is some suggestiveness even in the method employed by the Indians in first clearing a piece of forest land, as described by Champlain, where they cut down the trees three feet from the ground, and then burned the branches upon the stumps, for such a method would leave available places for the separate hills only between the tree trunks on an average of some four or five feet apart. Such a first establishment of a new field, with the position of the hills conditioned by the stumps, would account for fields with the hills irregularly placed but about so far apart, and the fields with the hills in rows would be found either in naturally clear meadow land where there were never trees, or in a field long cleared, from which the stumps had been long rotted out. From the first coming of the whites, however, the Indians were very anxious to make use of the superior methods of the new comers, and in frequent deeds one can find mention of plowing up of so many acres of land as part compensation for a land purchase. Sometimes this plowing was offered by the whites as part of the inducement to get the Indians out of the vicinity, as at Northampton, to be explained later in connection with the removal of corn lands.

Concerning the agricultural implements employed, the shells

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<sup>1</sup> "Handbook of American Indians," *Bulletin* 30, *Bureau of American Ethnology*, vol. I, p. 25.

of clams and the shells and bones of other creatures with convenient hard parts are specifically mentioned; such as deer scapulae, the carapace of the Turtle, or that of the horse-shoe crab, this latter naturally only close to the coast, where Champlain observed it. Hoes and spades of stone were also used.<sup>1</sup> William Wood, in *New England's Prospect*, 1634, gives preference to cultivation by clam shells over that by European tools, in spite of the fact that the plough will "teare up more ground in a day, than their Clamme shels could scrape up in a month."<sup>2</sup> But here again the superior tools of the whites appear often as compensation in land purchases, especially "howes." It is also very probable that in the majority of cases the original tools were mainly of wood, such as we now find among the more primitive aborigines still extant.<sup>3</sup>

The pictures drawn from the earlier observers concerning the guarding against the two chief annoyances, crows and wolves, are very human. Is it possible that the "great many little houses scattered over the field" which Champlain saw in Boston were connected with scaring of the crows, and used perhaps as watch houses for the "biggest children" to lodge in during the critical time for this purpose, and also possibly to "keep the Wolues from the fish till it be rotten"?

## 2. ABORIGINAL CORN-FIELDS ON ASSONET NECK, NEAR TAUNTON

There are no less than four different localities upon Assonet neck in the town of Berkley, where the ground is covered with rows of earth mounds, which traditionally are known locally as Indian corn-fields, and the appearance of which corresponds closely to all descriptions of such grounds.

- These are (1) in woods, on the Phillips farm;  
(2) in woods, on the Delabarre farm;  
(3) in the Bennett pasture;  
(4) in the Coombs pasture.

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<sup>1</sup> Cyrus Thomas, *loc. cit.*

<sup>2</sup> Cited in a note by the editors of the above mentioned edition of Bradford, vol. I, p. 219.

<sup>3</sup> For this see the recent article by Hough, "Corn cultivation among modern Hopi," *Proceedings of the United States National Museum*, vol. 54, pp. 235-296, especially the figures of Hopi agricultural implements of wood on pl. 19.

Although it strikes one at first, especially one who has had little or no experience with surface indications of ancient human activities, as unlikely that the traces of ancient tillage could persist for so many centuries, yet a study of the early accounts of the methods of cultivating Indian corn as practised by the aborigines renders quite possible the persistence of such culture.<sup>1</sup> What is significant in these accounts as foundation for a belief in the long continued preservation of the corn-hills, even down to the present time, is the following group of facts: the same hills were used year after year; they were highly fertilized; there were annual additions to the hills, making them of considerable size. After the abandonment of cultivation, the fertility and previous culture of the hills would for a long time support abundant vegetation, whose decay would contribute to their size, and whose roots and leaves would bind together the soil and preserve it from erosion. The spaces between the hills, hard trodden by the laborers and never worked or fertilized, would support only the more meagre vegetation of our New England wild pastures; would furnish the channels through which water would drain; and would form natural pathways which men and cattle passing through the fields would follow for the most part, thus treading them down, in preference to walking up and down over the hills. Under these conditions, it is not surprising that in many places the original hills should never yet have disappeared. This antecedent probability is confirmed by our observations. The photographs that we present (figure 11) give conclusive evidence that we have to do with genuine remains of Indian cultivation. They are easily distinguished from any natural formations, such as merely "hummocky ground," or hillocks of bunch-grass and similar growths. Moreover, they present a wholly different appearance from that of abandoned corn fields of the whites. If white men ever used them, it could have been only for a brief period after they first began cultivation in old Indian grounds, and before they made use of the plough.

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<sup>1</sup> For clearly discernible remains of cattle paths and a certain type of artificial pond vastly more ancient than these American Indian records, see A. J. and G. Hubbard, *Neolithic Dew Ponds and Cattle-Ways*, Longmans, Green and Co., 3d edition, 1916.

These ancient corn-fields on Assonet neck are much more extensive than those of Northampton, where we have also observed them. This neck comprises about twelve hundred acres, lying in an angle at the confluence of the Taunton and Assonet rivers. It was one of the few places near Narragansett bay which remained

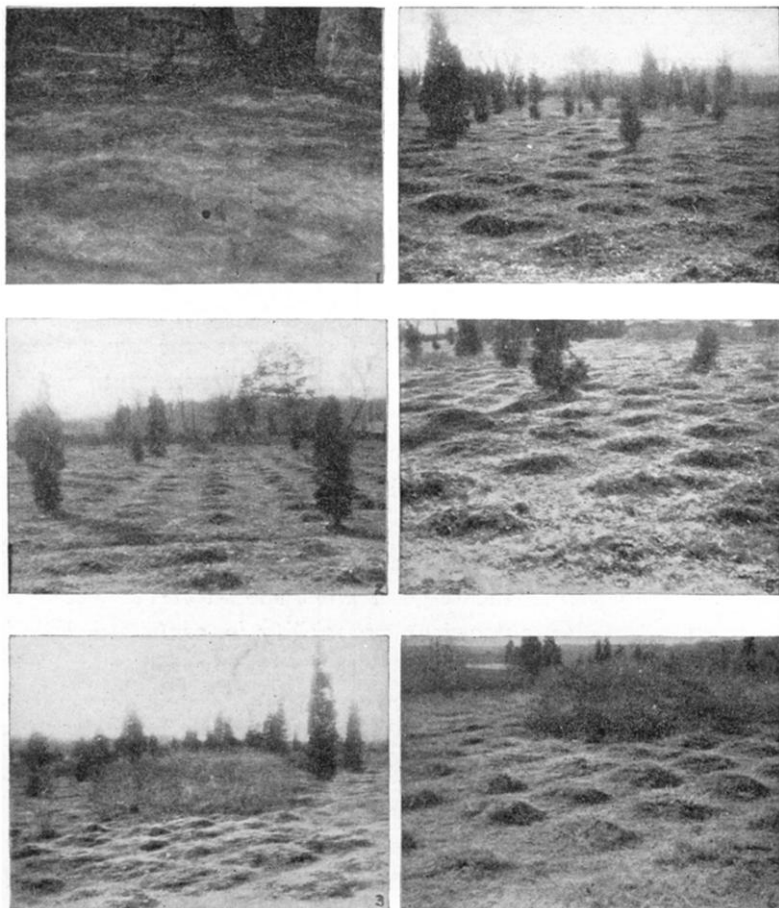


FIG. 11.—Indian corn-hills at Assonet neck, Mass. (1) In woods on Delabarre farm; (2) Coombes Pasture, looking south along rows; (3) Coombes Pasture, looking southwest; (4) Coombes Pasture, looking southwest along diagonals; (5) Coombes Pasture, looking southwest along diagonals; (6) Bennett Pasture, looking southwest along diagonals.

in possession of the Indians until the close of King Philip's war. Several former sites of Indian villages have been discovered on it, and it was undoubtedly once extensively cultivated. There seems to be some evidence that it was little inhabited after the great plague of 1616. The passage of three hundred years, however, has left its ancient corn-fields still clearly marked in woods, pastures, and other places left untilled by the whites. Some families long resident on the neck still call them Indian corn-hills. Four separate localities, as enumerated above, are known to the writers, and there are very likely others which they have not yet explored. The total area known to be occupied thus is about thirty acres, which must include over eighty thousand hills.

The cultivation here, in every one of the four localities, was in the highest degree regular and orderly. The hills lie in almost perfectly regular parallel rows, nearly evenly spaced in the rows, so that the lines are straight not only in one direction, but also in the direction at right angles to that, and likewise in the two diagonals. Two of the localities are in woods. In such situations they are least clearly marked because the decay of leaves and fallen branches is slowly obliterating them by filling in the spaces between them. One of our photographs shows them, though not so clearly as they can be seen on the spot, underneath a white pine tree that is six feet in circumference at the base. The other two localities are in open pastures, offering better opportunities for study. In both of these places the direction of the rows, corrected for magnetic variation, is N. 20° E. and E. 20° S., uniform in the eight different measurements taken. The two localities are separated by about half a mile, one being on the Taunton river side of the neck, the other near Assonet bay. One field in the woods is on the top of a narrow ridge that runs about north and south in the middle of the neck, at a place where it is nearly level, fifty to sixty feet above sea-level. The other three are on ground that runs from this ridge down towards the water on the one side or the other in alternate slopes and levels, and for the most part on the level portions.

The spacing of the hills is not the two feet of the Hurons, but very nearly the same as that found by Lapham in Wisconsin,

and by early observers in New England and Virginia. Seven lengths of about fifty feet each have been measured and the hills counted. In one of the two localities in pastures the hills were found to have an average distance apart of 3.75 feet, with a minimum of 3.25 and a maximum of 4.25; in the other, an average of 4.35 feet, with minimum of 4 and maximum of 5. The general average, then, is slightly over four feet, which is the distance of a long stride.

About a hundred of the hills; with the spaces between them, have been thoroughly dug over, in order to observe their structure and to see if Indian implements might be discovered. Many stones of all sizes were found within the hills. Evidently the Indians did not habitually throw these out, as one might naturally expect that they would have done. Very likely a moderate number of them was regarded as desirable, perhaps to keep the soil looser, perhaps even to facilitate digging. Many thin stones were found of such shape that they might well have been employed as hoes, but it was impossible to be sure whether they had actually served as such. Two well shaped oval hoes or spades of slate or similar material, one of them with notches at the sides, two broken arrow-heads, and a small mortar such as might have been used for grinding mineral paint, were the only indubitable Indian artifacts discovered.

### 3. AN ABORIGINAL CORN-FIELD IN NORTHAMPTON

Attention has recently been directed to a rough field or pasture in Northampton, Mass., the surface of which is covered by small mounds set in definite rows, and evidently, both by the position of the field relative to traditional Indian sites, as well as by the intrinsic evidence of the field itself, a part of aboriginal corn-planting ground. The accompanying map, a part of one published in Trumbull's *History of Northampton*,<sup>1</sup> and reproduced from one issued by the Town in January, 1831, serves to show the main centers of activity, both of the Indians and of the English settlers (fig. 12).

Naturally the underlying features which have conditioned all settlement activities of both races are the courses of the two rivers

<sup>1</sup> Gazette Printing Co., Northampton, 1898, vol. 1, folder between pp. 16-17.



FIG. 12.—Map of Northampton, Mass. Drawn in 1831.

of the vicinity, the Connecticut, which in early times was characterized by a great bend, or "ox-bow," incorporated in the main stream, and the smaller and still more sinuous stream, the Mill river. Throughout the area of this map, and further, the Connecticut is a

very tortuous stream, abounding in extensive bends and loops. Of those shown here the most northern, extended towards the west and forming a long and narrow loop, is occupied by the settlement of Hadley, founded in 1659, which consists essentially of two streets, running north and south, connecting the two ends of the loop. Further down, near the southern limit of the map, as given here, is a second large loop or "ox-bow", more typical in its shape than the one at Hadley, and still at this time forming an integral part of the Connecticut river, its enclosed meadow, "Hockanum," being directly connected with the land upon the east side. Ten years after the drawing of this map, in the early spring of 1840, this ox-bow was cut off by the familiar action of rivers in such cases, and the new course connected the two banks at the mouth of the loop, leaving the ox-bow as a quiet lagoon, known locally as the "old-bed," and a famous fishing ground. A more careful scrutiny of the map at this point will show that in prehistoric times a similar ox-bow was cut off, situated farther to the west, and that its remnant, also in the form of a still more shrunken lagoon, cut into two pieces, was plainly seen in 1831.

If attention is now directed to the smaller stream, "Mill river," its earlier course, and the one used at the coming of the whites, as indicated here by the double dotted lines, caused it to form an extensive loop, almost surrounding "Fort Hill," and finally emptying into the prehistoric ox-bow. This stream, more than the larger Connecticut, caused the early English settlers much annoyance by frequently flooding its banks, so that, not only in the spring, but almost continually in some seasons, the meadows between this loop and the Connecticut were under water. This soon caused the settlers to dig a new course directly to the Connecticut (1720), cutting off one whole side of the loop, and effecting a juncture directly to the side of the ox-bow as in this map. Since the severance of the ox-bow, ten years later, the lower course of Mill river was again changed, and it now empties into the main Connecticut.

The traditional site of the Indian town, where the purchase was probably made for the present town of Northampton by John Pynchon, was the sightly piece of raised ground lying in the

little loop of Mill river, and it was evident from the outset that so close a proximity to the place where the English designed to build would be in many ways unpleasant. It was therefore definitely stipulated, and so stated in the original deed of purchase, that the Indians were to remove their settlement here, in the loop of Mill river, and locate upon the east side of the Connecticut the following year (1654), the English to plow up for them sixteen acres of meadow land there for the planting of their corn. The Indians were allowed to keep their present corn-fields for the year following, 1654, but after that time they were to remove wholly to the east of the Connecticut, and leave the English finally free from them. The original text, which seems to have been rather unusual in its definiteness, runs in part as follows:

. . . The Aforesaid Indians and in pticular Wawhollowa, Nenessahalant, and Nassachohe beeing the Sachems of Nanotuck doe for themselues and with the Consent of the other Indians and owners of the sd Groundes, sell, giue, and Grant vnto John Pynchon of Springfeild and to his Assignes for and in the Consideration of one hundred fathum of Wampam by Tale and for Tenn Coates (besides some small gifts) in hand to the said Sachems and owners, All the land Aforesaid as [by] these presents haue bargained, granted and sould to the [said] Pynchon all and singuler the said landes free from all Cumbrances of Indians provided the said Pynchon shall plow vpp or cawse to bee plowed vpp for the said Indians Sixteene Acres of land on the Easterly side of Quoneticutt River which is to bee donn sometime next summer 1654 And in the meane time viz the next spring 1654, the Indians haue liberty to plant ther present Corne feildes, but after that time they are wholly to leaue that West side of the river. And not to plant or molest y<sup>e</sup> English ther.

All the said Premises the said Pynchon and his assignes shall haue and enjoy Absolutely and Clearly forever [from] all in Cumbrances from any Indians or their corne feilds.

Thus it is clear that the Indian corn-fields included within this loop of the smaller river were harvested by them for the last time in the fall of 1654, while during the next few years the Indian people themselves were much in evidence, living for the most part in friendly relations with the whites, paying an occasional fine for drunkenness, or breaking into a mill and stealing "divers tool and meal." In ten years, however, probably fearing the Mohawks, who had then become occasional visitors to this valley, the local

Indians applied to the English town for "a gift of land on which to build a fort" [Trumbull, *History of Northampton*, vol. 1, p. 176.] This was granted under certain rather stringent conditions, but there is no definite record as to the location of this later fort. Although some of the local historians seem to mix this up with the fort in the loop of the river of previous occupancy, there is good evidence that such was not the case, as this latter territory had already been apportioned to several English settlers. The most likely site for this later settlement was at the bend of the river west of Hadley, on the way to Hatfield, marked on the extreme north of the accompanying map as "Fort Plain." In any case this interval of Indian occupancy was of short duration, for at the outbreak of Philip's war in 1675 the Indians withdrew from the entire region, never to return.

This, then, is the history of a definite Indian village, the one almost coincident with the first center of Northampton. Traditionally it consisted of a "fort" or palisade, which is said to have been on the bluff at the north-east end of the elevation, on grounds now owned by Mr. Frank Lyman. This location is a very sightly place, looking off towards the east with a long stretch of meadows, and Mts. Holyoke and Tom in full view. Almost at one's foot the original channel of the Mill river is distinctly visible, cutting off the village site from the plains below, and emptying finally into the side of the oldest ox-bow. Since, in this region at least, there are always to be expected in each Indian settlement three associated sites, the village, the corn planting grounds, and the burying ground, one is tempted *a priori* to make a guess as to the most probable location for the two last. Burying grounds hereabouts seem to show no fixed relationship to the village site, and their discovery is a matter of chance, bones being found by plowing or other excavation; but if any bones have ever been unearthed here their tradition has long been lost. That such has been the case is very probable, as South St., one of the most populous residence streets, runs lengthwise through the entire elevation, and, as this is also one of the oldest streets, any such bones would have been found early, when Indian bones were sufficiently frequent to have caused no special mention.

As for the corn-fields, however, their location could have been only in one general region, along the north and west side of the elevation. The land drops precipitously almost alongside the street, and the lower level extends a long distance as a rather narrow meadow, enclosed within the loop, and of very easy access to the high land. On the east and south of the high land, on the other hand, the meadows were cut off from the settlement by the loop of the river, and in addition to this the meadows were frequently flooded, previous to 1720 when the river was put into a new channel.

It is precisely upon this northern and western meadow, practically within this river loop, that there are situated the remains of the Indian corn-field which is the subject of this portion of the paper. It lies in a somewhat sunken meadow, shut off on one side by a railroad embankment and on the other by the bluff leading up to the high land of South street. About a hundred years ago a canal was constructed between Northampton and New Haven, which ran immediately at the foot of the bluff, as still shown on the map of 1831, and naturally this part of the field is free from all traces of cultivation. But between the old canal bed and the railroad embankment, which here runs parallel to it, extend some three thousand elevated mounds in nearly perfect rows, presenting the general appearance of the accompanying photographs.

One first gains access to this field (fig. 13, 1), which is low and sunken, by crossing over the railway, and coming down to it upon a long narrow mound, clearly visible in the foreground, and giving at first much the appearance of an intentionally constructed driveway. A moment's study of the land back of this, and upon the other side of the railway, shows it to be nothing but the end of a natural slope, the result of glacial action and due wholly to natural causes. When the observer has stepped wholly off this mound and stands upon the lower level (fig. 13, 2 and 3) he stands among the corn-hills and sees them in very good parallel rows, in a general NE.-SW. direction. The houses upon the bluff in front are placed along the road, South St., which traverses the bluff lengthwise, and are here situated where the bluff is very narrow, scarcely wider than the

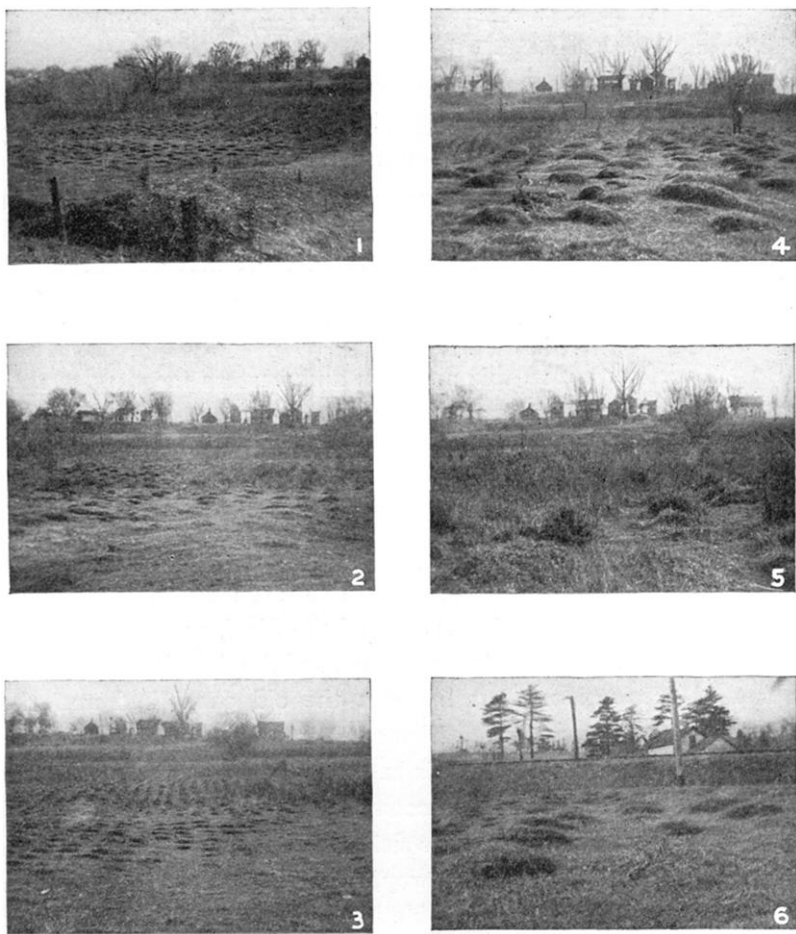


FIG. 13.—(1) Indian corn-hills in meadow between Earle and South Streets, Northampton, Mass. Approach from railroad embankment, looking southeast; (2) Indian corn-hills in Northampton. Observer standing just to the east of the large mound shown in (1); (3) Indian corn-hills in Northampton. Observer a few steps further east than in (2), in alignment with the rows of corn-hills shown in (3); (4) Hills in the middle of the field; in the immediate foreground some of the elongated mounds; (5) a detail of the Northampton corn-field showing growth of hardhack (*Spirea*); (6) A view of nearly leveled hills lying near the railroad embankment; the observer is looking northwest, just the opposite direction from that from which the five others were taken.

street and the two rows of houses. The more expanded portion of the higher land is to the observer's left (east), and runs from here nearly half a mile before the end of the bluff is reached, and the presumable site of the palisade.

The arrangement of the separate hills does not quite correspond to the double alignment of the fields of Assonet, nor is at all like the perfectly irregular order described by Lapham, which may perhaps have for its cause the method of planting on partially cleared forest areas. It is an alignment in one direction only, fairly straight rows running from northwest to southeast, but with the distance between the individual hills of each row so irregular that for the most part the hills do not line up when viewed across the longitudinal rows, either at right angles or diagonally. In a few spots there is such a chance alignment, but it does not continue more than a few hills, and is plainly a chance arrangement.

The rows were evidently run by eye, without the use of a line, as they do not keep quite straight, but get to curving quite perceptibly, all in one direction, when looking down the entire field. The average distance from row to row is a little more than 3 feet; we had a meter stick to measure them with and the meter stick, would about span them from the center of one hill to that of the nearest one in the adjacent row. The distance from one hill to the next in the same row was approximately the same, although the fact that definite cross-rows could not be perceived was a clear proof that there was no constancy in this direction. Down in the south corner of the field, where it was the most overgrown by the spirea bushes, the distances were rather greater than elsewhere, that between rows being fully four feet. In one or two places, where a curving of one or two rows had left a chance space between the rows, a single hill, or perhaps two hills, were squeezed in out of alignment, evidently with the utilitarian purpose only of getting in all the corn-hills possible within that area. At the present time the entire meadow is rather wet for successful corn planting, but the very next field to it on the east was planted to corn only last year, and the crop was apparently a good one. This field was lower, and has in the middle some standing water at present, but even

here the spirea tops, sticking up through the water, are as definitely in rows as elsewhere. Furthermore, several changes within historic times must have effected some changes of level over the entire region, such as, for instance, the building of a dam in Mill river a little below this about 150 years ago, and probably also the formation of the solid railroad embankment in 1840. There is decided indication of spring inundations over that part where the corn-hills are not now very apparent, and we may readily assume that such profound surface changes as have taken place over this region, dams, embankments, and so on, have brought about changes in the conditions over the surface, and in the action of the water.

While in general the separate hills are fairly uniform in size and shape, conical mounds of perhaps two feet in diameter, and 8 to 12 inches in height, there are certain regions where the mounds are irregular in shape, and prolonged laterally, generally obliquely, to give the appearance of the conventional gravemound (fig. 13, 4). In one place, and involving some two rows, these oblong mounds come in succession and involve twenty to thirty hills in all. In one portion of the field the ground is covered with hardhack, *Spirea tomentosa*, which, as is its habit, picks out the elevations and leaves the lower levels bare (fig. 13, 5). Here, even in November, when the bushes are represented by bare and dry stalks the alignment is well seen by following the tips of the dry bushes, and thus where otherwise the area would be a hopeless tangle, the definite alignment of the corn-hills is as clearly marked as elsewhere.

In some places, whether the mounds are quite free from the spirea, which must have somewhat of a protective effect upon them, or from some other reason, such as inundations, the mounds are being gradually worn down, and in some directions or in some lightings are but dimly seen (fig. 13, 6). The particular ones shown in this figure lie near the railroad embankment and they may have suffered from some of the circumstances incident to this work. Finally, over the easternmost half of this field the corn-hills have all but disappeared, although there are sufficient traces here and there to assure one that this tract, as well as the part where the preservation is more perfect, was once included in the original corn-planting lands.

If, now, by the help of this corn-field, and what there is left by tradition, and by our knowledge of former courses of the rivers and the water level in general in this region, we should attempt to reconstruct in our mind's eye the appearance of this little region just previous to the advent of Master John Pynchon, Real Estate Dealer from Springfield, we get a most pleasing picture of an ideal aboriginal settlement, exceptionally well protected by nature from hostile forces and furnished with just the advantages desired. A bluff, sufficiently high to overlook the surrounding country on all sides, tapers off behind into a narrow neck, easily guarded, and is enclosed by an almost complete loop of a fairly swift stream, large enough to furnish a decided barrier to a band of hostile men. Aside from the highland the loop also included an ample stretch of good corn land on a clear meadow, protected by its position from the frequent floods from both rivers, which in front and on the lower (southern) side continually convert the meadows lying without the loop into an unbroken sheet of water. When one sees this palisaded village, standing up out of this vast expanse of flooded meadows, one thinks forcibly of Judd's derivation of the word Nonotuck (with its dialectic forms Norwattock, Nolwottogg, etc.), as "in the midst of the waters," from Natick *noeu* or *noau* (in the midst of), and *tuck*, a stream or river.<sup>1</sup> Unfortunately, however, as in so many other cases, a romantic significance given for an Indian word cannot stand the common-sense explanation of a man familiar with the spoken tongue of the Algonkians, in such nearby tribes as the Penobscot or Passamaquoddy; and in spite of the emotional appeal of this "Village-in-the-midst-of-the-river," candor compels us to state that our friend Dr. Frank G. Speck, who is not only a philogogist of much note, but who also lives on the best terms with the tribes just mentioned, and speaks their language with perfect readiness, says that *nonotuck*, in all its different dialectic forms, is simply to this day the common term for "up-river," a term applied to any thing, island, tribe, or whatever it may be, in the direction

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<sup>1</sup> Sylvester Judd, *History of Hadley*, p. 114. Trumbull's Natick Dictionary gives the word *noeu*, with the meaning of "in the middle, the midst," and Eliot uses it in this sense in his Bible, Joshua, chap. XIII, verses 9, 16.

designated. This was hardly the name by which the people of this village designated themselves, but as Springfield, down-river from Nonotuck, was the first locality about here known to the whites, who opened a trading-store in 1636, having reached the Connecticut at this place across country, through Quinsigamond (Worcester) and Quabaog (Brookfield), they would first hear of these up-river tribes from the local Indians that came about Master William Pynchon's store, who would naturally speak of them as *nonotuck*, the people up-river. When, twenty years afterwards, John Pynchon, son of William, bought the land of these up-river Indians, a part of his stipulation included the promise on the part of these same Nonotucks to remove across the big river, and leave the land in entire possession of the English.

#### 4. CONCLUSION

There can be no doubt, then, that these "Indian corn-hills," still extant and plainly visible not only in these places that we have described but probably also in many others, are exactly what local tradition in some cases holds them to be—genuine relics of Indian cultivation of the land. Their general appearance proves it, conformable as it is to that which the hills in actual cultivation by the Indians must have presented, and differing wholly from that of fields in which any kind of white men's crops have been grown. The known identity in locality of the present remains in Northampton with the site of the ancient Indian corn lands is another convincing proof. It is easily understood how conditions have insured their survival, in many cases with probably little change in appearance from that which they presented when they were first abandoned, two and a half to three centuries ago.

It is likely that, if the fields in which they lie continue as waste land or used for no other than pasturage purposes, they will still be easily observable for at least as many centuries to come. We have found them varying considerably in size and shape and distance apart; and the authorities whom we have quoted describe still further variations. In size and shape, they are usually low roundish individual mounds, less than two feet in diameter, rising above the

intervals between them from eight to twelve inches in the best preserved examples, and thence down now to a mere trace in cases where destructive influences have affected them. Sometimes, however, a number of them are joined together into a continuous mound; and apparently Lapham observed a type where entire rows formed continuous ridges without individual hills, though his description is not definite enough to make this sure.

As to their distance apart, there was evidently much difference in practice among Indians of different localities, though perhaps a considerable uniformity in any one locality, unless conditions varied, as for instance in the use of land newly cleared of trees as against that which had always or long been clear. At one extreme are the hills that Lapham describes as scattered over the surface with the greatest irregularity. The closest regular spacing seems to have been that of the Hurons, two feet or less. A third method of spacing was that of Lapham's parallel ridges about four feet apart, apparently without individual hills. Most of the other quoted authorities give the interspaces as three to five feet, without mention of whether they were irregularly placed or formed definite rows, and in the rows continuous ridges or separated hills, yet almost certainly the latter except in newly cleared land. Where definite rows of individual hills were formed, they were sometimes aligned in one direction only and no attention was paid as to whether or not they formed straight lines with one another in the direction at right angles to that; but sometimes great care was used to arrange them straight and true in both main directions and thus also in both diagonals. At Northampton there are regularly parallel, though not necessarily entirely straight rows a little over three feet apart, singly aligned because within the rows the spacing of the hills was irregular. Finally, most definite and orderly of all, on Assonet neck the rows run everywhere perfectly straight (unless rocks or other obstacles interfere), doubly aligned, with an almost constant distance between hills of a little more than four feet in both directions.